



FLORENCE COPPER INC.

1575 W. Hunt Highway, Florence, Arizona 85132 USA

florencecopper.com

December 23, 2020

David Albright
Manager, Groundwater Protection Section
USEPA Region 9 (WTR-4-2)
75 Hawthorne Street
San Francisco, CA 94105

**Re: Transmittal of Mechanical Integrity Testing Summary 2020
Production Test Facility Injection Wells: I-01, I-02, I-03, and I-04
Florence Copper Project, Florence Arizona**

Dear Mr. Albright:

Florence Copper Inc. herewith transmits the enclosed Technical Memorandum, *Mechanical Integrity Testing Summary, Production Test Facility Injection Wells: I-01, I-02, I-03, and I-04, Florence Copper Project, Florence Arizona.*

Please contact me at 520-316-3710 if you require any additional information.

Sincerely,
Florence Copper Inc.

A handwritten signature in blue ink, appearing to read 'Brent Berg', with a long, sweeping underline.

Brent Berg
General Manager

cc: Nancy Rumrill, U.S. Environmental Protection Agency
Maribeth Greenslade, ADEQ

Enclosure



HALEY & ALDRICH, INC.
One Arizona Center
400 E. Van Buren St., Suite 545
Phoenix, AZ 85004
602.760.2450

TECHNICAL MEMORANDUM

18 December 2020
File No. 134160-013

TO: Florence Copper Inc.
Ian Ream, Senior Hydrogeologist

FROM: Haley & Aldrich, Inc.
Sarah Cooper, P.E.

SUBJECT: Mechanical Integrity Testing Summary
Production Test Facility Injection Wells: I-01, I-02, I-03, and I-04
Florence Copper Inc., Florence, Arizona

Introduction

This Technical Memorandum presents the results of mechanical integrity testing of Production Test Facility (PTF) injection wells I-01, I-02, I-03, and I-04 during November and December 2020 for Florence Copper Inc. (Florence Copper) in Florence, Arizona.

Injection wells I-01, I-02, I-03, and I-04 are located within the Underground Injection Control (UIC) Permitted Area of Review for UIC Permit R9UIC-AZ3-FY11-1 and were completed as Class III injection wells for the PTF (Figure 1).

Florence Copper contracted Verdad Group, LLC to perform the mechanical integrity testing, and a Haley & Aldrich, Inc. field geologist provided oversight for each test.

Demonstration of Mechanical Integrity

Florence Copper conducted Part I mechanical integrity testing at the four injection wells by means of a Standard Annular Pressure Test (SAPT) in accordance with Part II.E.3.a.i.A of the UIC Permit. The mechanical integrity tests were performed on the dates listed below:

Well ID	Mechanical Integrity Test Date
I-01	11/18/2020
I-02	11/24/2020
I-03	12/03/2020
I-04	12/09/2020

Completed SAPT forms are included in Appendix A. As-built diagrams are provided in Appendix B.

Results

Each of the four injection wells passed mechanical integrity testing. Results of the tests are presented in the completed SAPT forms (Appendix A).

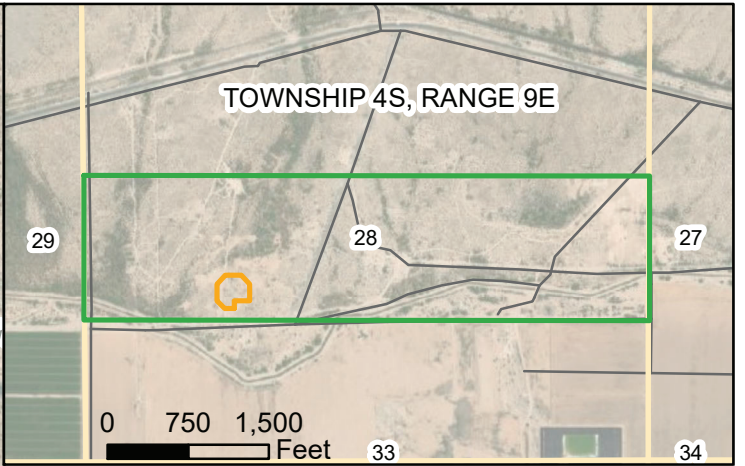
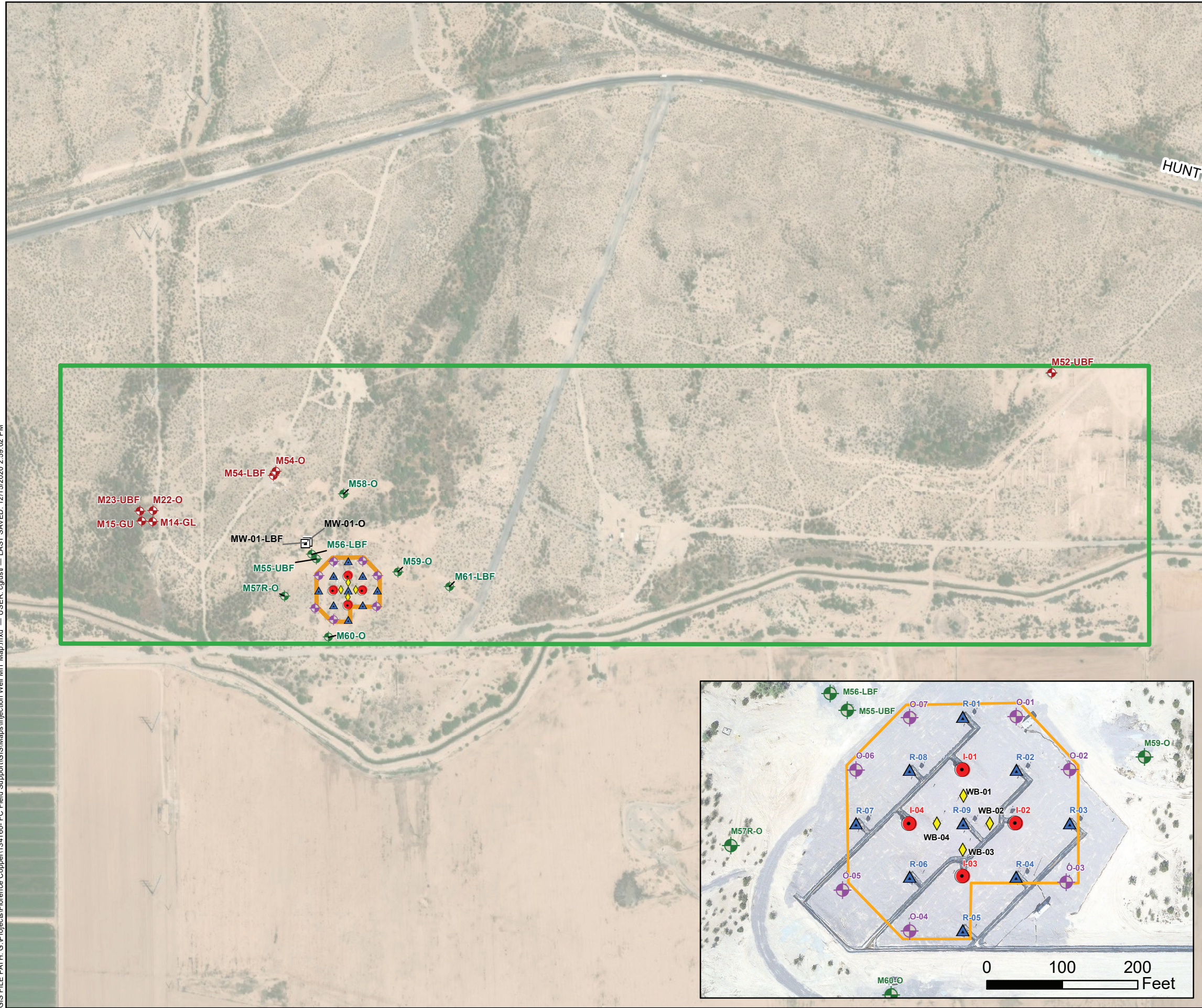
Enclosures:

Figure 1 – Well Locations

Appendix A – Completed Standard Annular Pressure Test Forms

Appendix B – Injection Well As-Built Diagrams

FIGURE

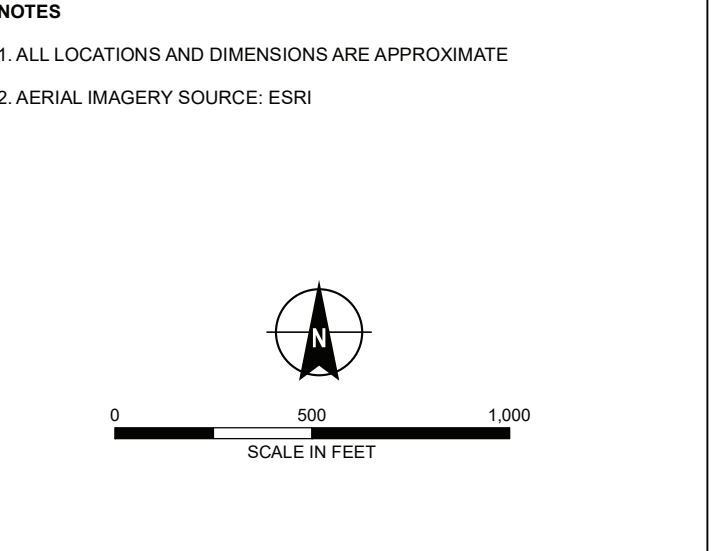


LEGEND

- INJECTION WELL
- RECOVERY WELL
- WESTBAY WELL
- OPERATIONAL WELL
- OBSERVATION WELL
- SUPPLEMENTAL MONITORING WELL
- POINT-OF-COMPLIANCE WELL
- STATE LAND LEASE
- PTF WELLFIELD

NOTES

- ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE
- AERIAL IMAGERY SOURCE: ESRI



HALEY ALDRICH FLORENCE COPPER PROJECT
FLORENCE, ARIZONA

FLORENCE COPPER DECEMBER 2020

WELL LOCATIONS

FIGURE 1

APPENDIX A

Completed Standard Annular Pressure Test Forms

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Florence Copper, Inc

State Permit No. P-101704

Address 1575 West Hunt Highway

USEPA Permit No. R9UIC-AZ3-FY11-1

Florence, AZ 5132

Date of Test 11/18/20

Well Name I-01

Well Type Env-Injection-Class III

LOCATION INFORMATION SW Quarter of the NE Quarter of the SW Quarter

of Section 28; Range 9E; Township 4S; County Pinal;

Company Representative Ian Ream; Field Inspector Collin Giusti;

Type of Pressure Gauge Transducer inch face; 300 psi full scale; 0.001 psi increments;

New Gauge? Yes ☐ No ☒ If no, date of calibration 11/1/17 Calibration certification submitted? Yes ☐ No ☒

TEST RESULTS

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.

For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.

Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☒ No ☐

2-year test for TA'd wells on time? Yes ☐ No ☒

After rework? Yes ☐ No ☒

Newly permitted well? Yes ☐ No ☒

Time	Pressure (in psig)	
	Annulus	Tubing
15:52	165.850	same
16:02	164.218	same
16:12	162.912	same
16:22	161.628	same

Casing size 5-inch nominal

Tubing size AQ

Packer type inflatable packer

Packer set @ 3.91 FT (Top), 495.84 FT (Bottom)

Top of Permitted Injection Zone 418

Is packer 100 ft or less above top of

Injection Zone ? Yes ☒ No ☐

If not, please submit a justification.

Fluid return (gal.) 0.67

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 4.975 psi
Test Period Pressure change 4.222 psi

Test Passed ☒ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Ream

Printed Name of Company Representative


Signature of Company Representative

12-23-2020
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Florence Copper, Inc.

State Permit No. P-101704

Address 1575 West Hunt Highway

USEPA Permit No. R9UIC-AZ3-FY11-1

Florence, AZ 85132

Date of Test 11/24/2020

Well Name I-02

Well Type Env-Injection-Class III

LOCATION INFORMATION SW SW Quarter of the NE NE Quarter of the SW SW Quarter

of Section 28; Range 9E; Township 4S; County Pinal

Company Representative Ian Ream; Field Inspector Collin Giusti

Type of Pressure Gauge Transducer inch face; 300 psi full scale; .001 psi increments;

New Gauge? Yes ☐ No ☒ If no, date of calibration 11/1/2017 Calibration certification submitted? Yes ☐ No ☒

TEST RESULTS

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.

For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.

Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☒ No ☐

2-year test for TA'd wells on time? Yes ☐ No ☒

After rework? Yes ☐ No ☒

Newly permitted well? Yes ☐ No ☒

Time	Pressure (in psig)	
	Annulus	Tubing
14:24	167.738	same
14:34	168.205	same
14:44	168.581	same
14:54	168.980	same

Casing size 5-Inch nominal

Tubing size AQ

Packer type inflatable packer

Packer set @ 4.08 FT (Top), 496.01 (Bottom)

Top of Permitted Injection Zone 418

Is packer 100 ft or less above top of

Injection Zone ? Yes ☒ No ☐

If not, please submit a justification.

Fluid return (gal.) 1.24

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 5.032 psi
Test Period Pressure change -1.242 psi

Test Passed ☒ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Ream

Printed Name of Company Representative



Signature of Company Representative

11-23-2020

Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Florence Copper, Inc.

State Permit No. P-101704

Address 1575 West Hunt Highway

USEPA Permit No. R9UIC-AZ3-FY11-1

Florence, AZ 85132

Date of Test 12/03/20

Well Name I-03

Well Type Env-Injection-Class III

LOCATION INFORMATION SW Quarter of the NE Quarter of the SW Quarter of Section 28; Range 9E; Township 4S; County Pinal;

Company Representative Ian Ream; Field Inspector Collin Giusti;

Type of Pressure Gauge Transducer inch face; 300 psi full scale; .001 psi increments;

New Gauge? Yes ☐ No ☒ If no, date of calibration 11/1/2017 Calibration certification submitted? Yes ☐ No ☒

TEST RESULTS

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.

For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.

Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☒ No ☐

2-year test for TA'd wells on time? Yes ☐ No ☒

After rework? Yes ☐ No ☒

Newly permitted well? Yes ☐ No ☒

Time	Pressure (in psig)	
	Annulus	Tubing
11:14	130.369	same
11:24	129.743	same
11:34	129.343	same
11:44	129.783	same

Casing size 5-Inch nominal

Tubing size AQ

Packer type inflatable packer

Packer set @ 4.08 FT (Top), 496.01 (Bottom)

Top of Permitted Injection Zone 418

Is packer 100 ft or less above top of

Injection Zone ? Yes ☒ No ☐

If not, please submit a justification.

Fluid return (gal.) 0.70

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 3.911 psi
Test Period Pressure change 0.586 psi

Test Passed ☒ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Ian Ream
Printed Name of Company Representative


Signature of Company Representative

12-23-2020
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Florence Copper, Inc.

State Permit No. P-101704

Address 1575 West Hunt Highway

USEPA Permit No. R9UIC-AZ3-FY11-1

Florence, AZ 85132

Date of Test 12/09/20

Well Name I-04

Well Type Env-Injection-Class III

LOCATION INFORMATION SW Quarter of the NE Quarter of the SW Quarter of Section 28; Range 9E; Township 4S; County Pinal;

Company Representative Ian Ream; Field Inspector Collin Giusti;

Type of Pressure Gauge Transducer inch face; 300 psi full scale; .001 psi increments;

New Gauge? Yes ☐ No ☒ If no, date of calibration 11/1/2017 Calibration certification submitted? Yes ☐ No ☒

TEST RESULTS

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.

For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.

Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☒ No ☐

2-year test for TA'd wells on time? Yes ☐ No ☒

After rework? Yes ☐ No ☒

Newly permitted well? Yes ☐ No ☒

Time	Pressure (in psig)	
	Annulus	Tubing
11:05	160.095	same
11:15	159.710	same
11:25	159.053	same
11:35	157.734	same

Casing size 5-Inch nominal

Tubing size AQ

Packer type inflatable packer

Packer set @ 3.84 FT (Top), 495.77 (Bottom)

Top of Permitted Injection Zone 418

Is packer 100 ft or less above top of

Injection Zone ? Yes ☒ No ☐

If not, please submit a justification.

Fluid return (gal.) 0.78

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 4.802 psi
Test Period Pressure change 2.361 psi

Test Passed ☒ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

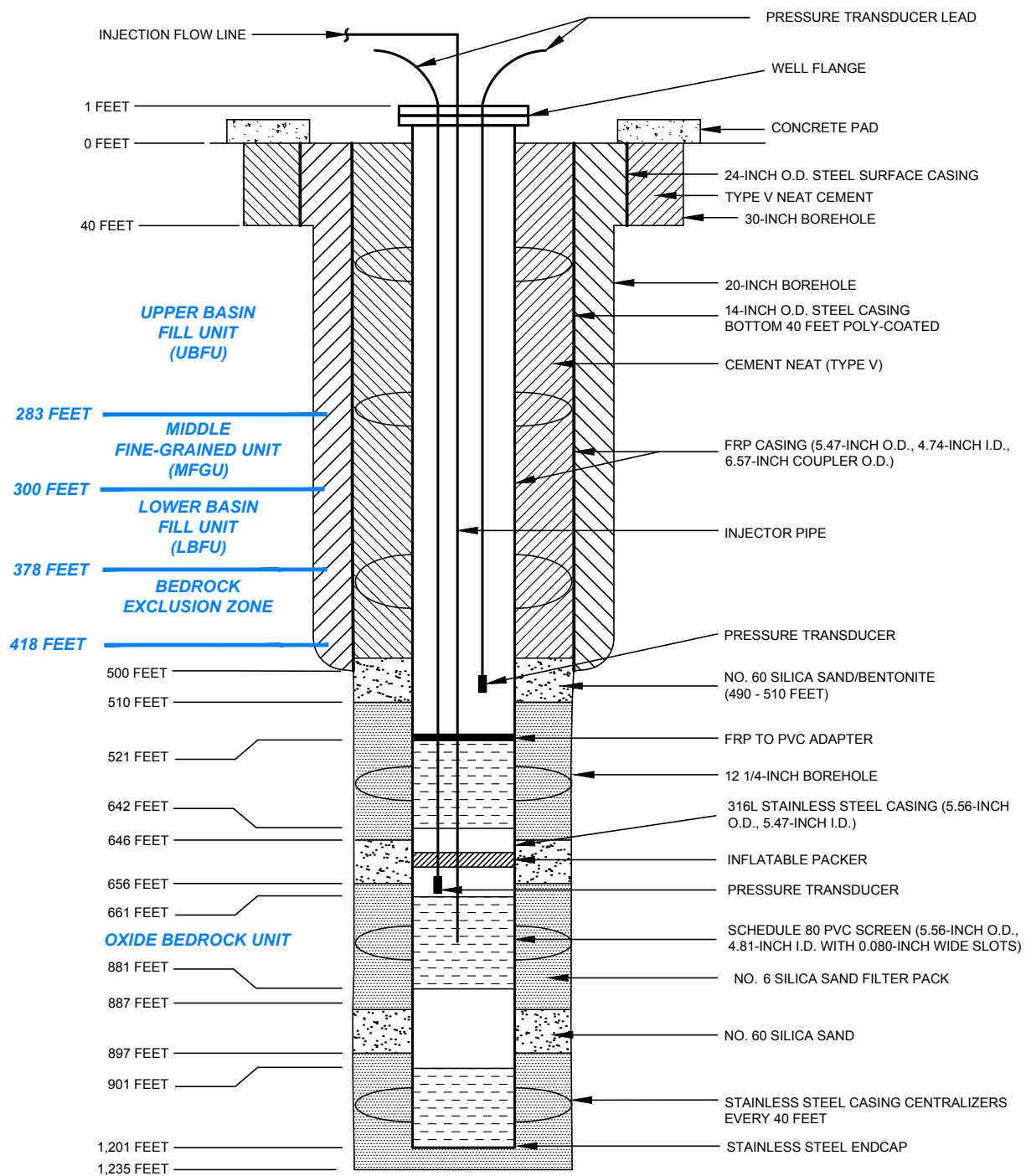
Ian Ream
Printed Name of Company Representative

[Signature]
Signature of Company Representative

12-23-2020
Date

APPENDIX B

Injection Well As-Built Diagrams



NOTES

1. WELL REGISTRATION NO.: 55-227963
2. CADASTRAL LOCATION: D(4-9) 28 CAC
3. MEASURING POINT ELEVATION: 1482.67 FEET AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. SOUNDING TUBE INSTALLED TO ~500 FEET

**HALEY
ALDRICH**

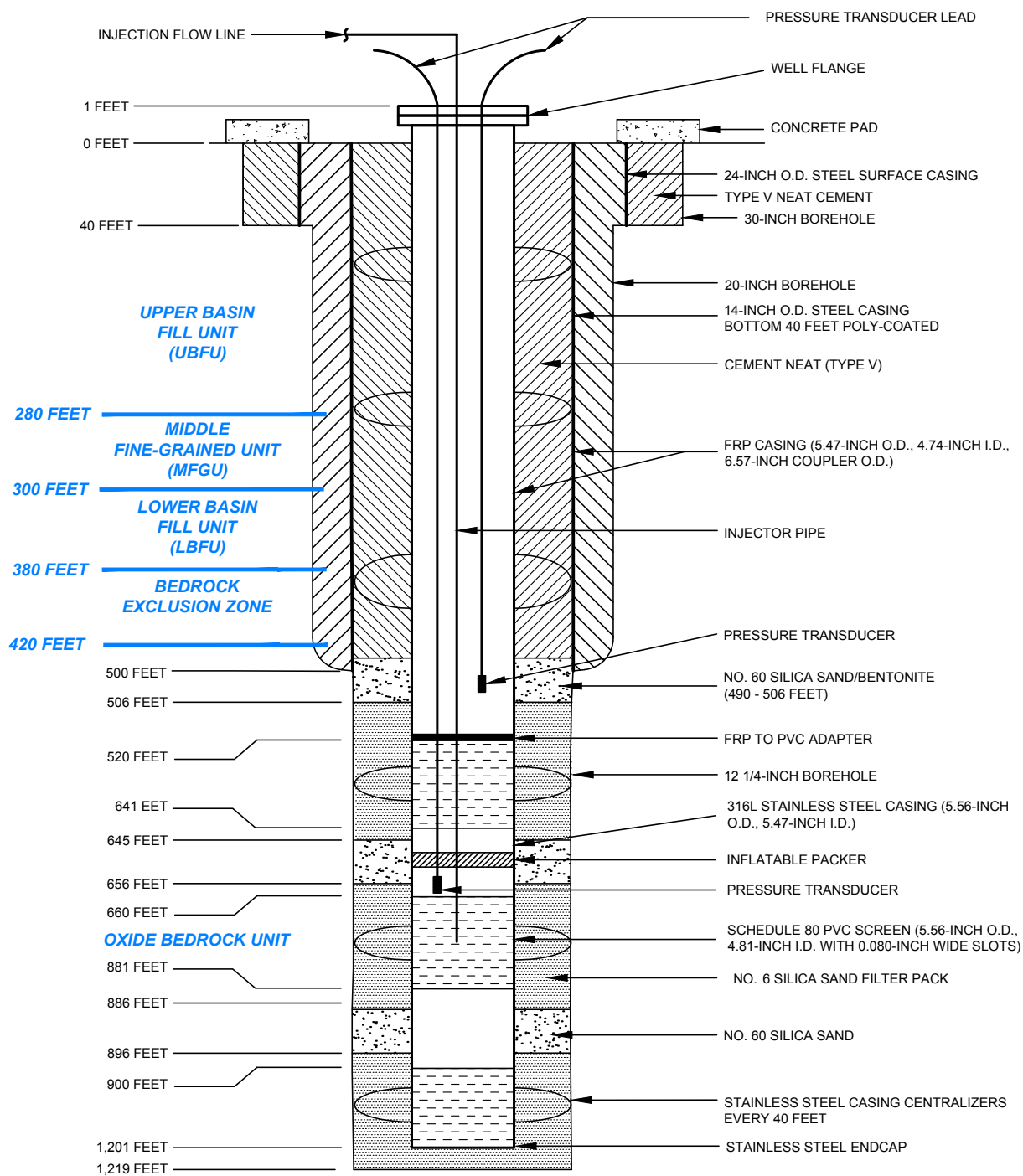
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

INJECTION WELL I-01 AS-BUILT DIAGRAM

**FLORENCE
COPPER**

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 4



NOTES

1. WELL REGISTRATION NO.: 55-227964
2. CADASTRAL LOCATION: D(4-9) 28 CAC
3. MEASURING POINT ELEVATION: 1482.61 FEET AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. SOUNDING TUBE INSTALLED TO ~500 FEET



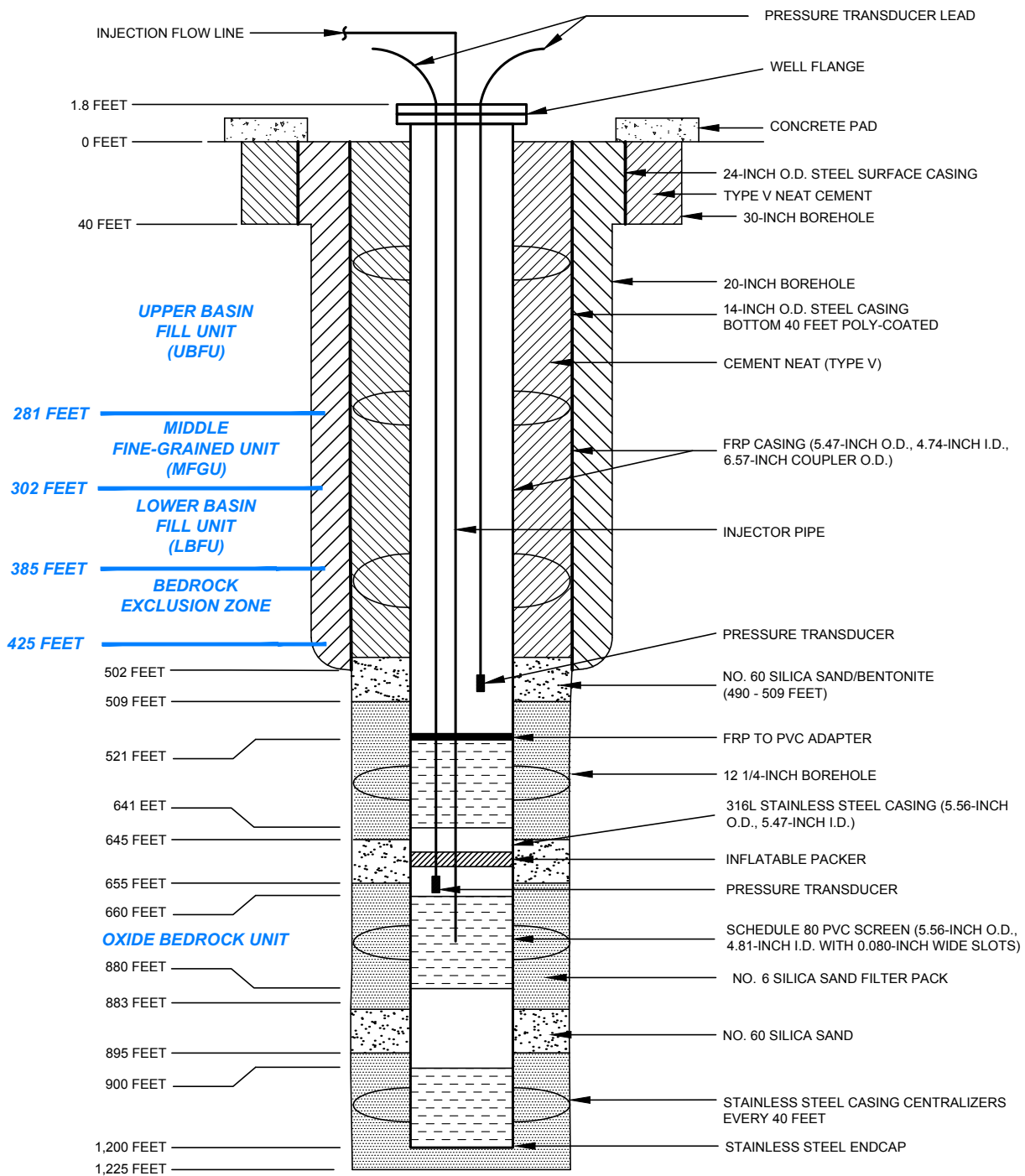
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

INJECTION WELL I-02 AS-BUILT DIAGRAM



SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 4



NOTES

1. WELL REGISTRATION NO.: 55-227965
2. CADASTRAL LOCATION: D(4-9) 28 CAC
3. MEASURING POINT ELEVATION: 1480.71 FEET AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. SOUNDING TUBE INSTALLED TO ~500 FEET

**HALEY
ALDRICH**

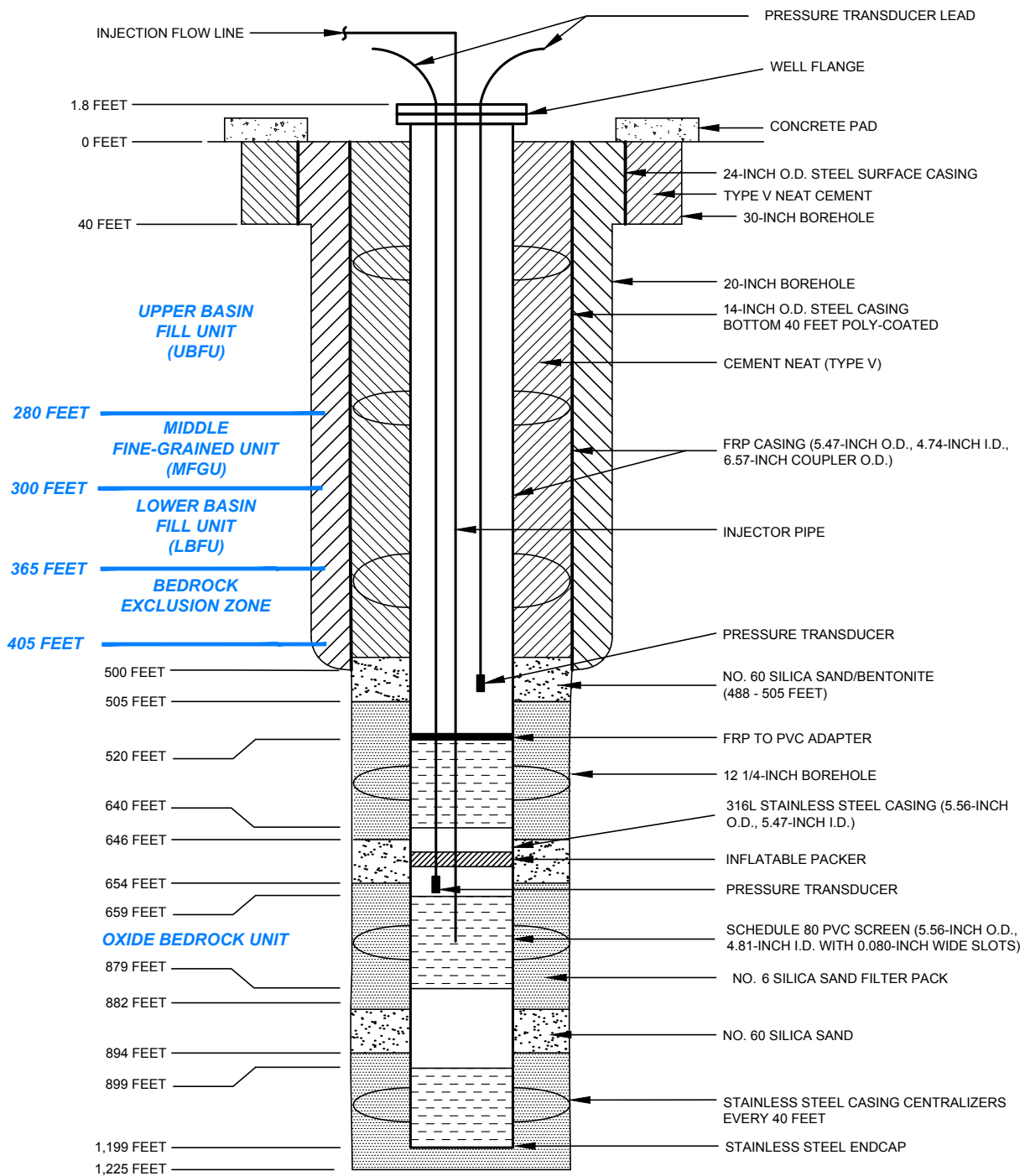
PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

I-03 INJECTION WELL AS-BUILT DIAGRAM

**FLORENCE
COPPER**

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 4



NOTES

1. WELL REGISTRATION NO.: 55-227966
2. CADASTRAL LOCATION: D(4-9) 28 CBD
3. MEASURING POINT ELEVATION: 1482.16 FEET AMSL
4. I.D. = INSIDE DIAMETER
5. O.D. = OUTSIDE DIAMETER
6. PVC = POLYVINYL CHLORIDE
7. FRP = FIBERGLASS REINFORCED PLASTIC
8. SOUNDING TUBE INSTALLED TO ~500 FEET

**HALEY
ALDRICH**

PRODUCTION TEST FACILITY
FLORENCE COPPER, INC.
FLORENCE, ARIZONA

I-04 INJECTION WELL AS-BUILT DIAGRAM

**FLORENCE
COPPER**

SCALE: NOT TO SCALE
SEPTEMBER 2018

FIGURE 4